CLAIMS

We claim:

1. An apparatus for detecting a cracked or broken case comprising:

a frame;

a conveyor means mounted on said frame, said conveyor means for moving the case along said frame; and

a first ram means affixed to said frame, said first ram means for applying a force onto a surface of a wall of the case.

2. The apparatus of Claim 1, further comprising:

a sensor means cooperative with said first ram means, said sensor means for detecting when the surface of the wall of the case has deflected beyond a desired amount.

3. The apparatus of Claim 2, further comprising:

ejection means affixed to said frame and cooperative with said conveyor means for ejecting the case from said conveyor means when the wall of the case has deflected beyond the desired amount.

4. The apparatus of Claim 1, further comprising:

a second ram means affixed to said frame and positioned in a different location on said frame from said first ram means, said second ram means for applying a force onto another surface of the case.

5. The apparatus of Claim 1, said first ram means comprising:

a pneumatic ram having a cylinder affixed to said frame, said pneumatic ram having a piston extending outwardly therefrom; and

an arm pivotally connected to said piston and pivotally connected to said frame.

6. The apparatus of Claim 5, said piston being movable between a first position and a second position relative to said cylinder, said first position causing said arm to be positioned away from the wall of the case, said second position urging the wall of the case outwardly.

7. The apparatus of Claim 6, further comprising:

a sensor means connected to said cylinder and cooperative with said piston, said sensor means for determining when said second position is beyond a desired limit of movement.

8. The apparatus of Claim 4, said second ram means comprising:

a pneumatic ram having a cylinder affixed to said frame and a piston extending outwardly of said cylinder, said piston being movable between a first position and a second position relative to said cylinder, said first position positioning said piston away from said another surface of the case, said second position urging against said another surface of the case.

9. The apparatus of Claim 8, said piston having a roller rotatably positioned at an end of the said piston opposite said cylinder.

10. The apparatus of Claim 3, said ejection means comprising:

a pneumatic ram having a cylinder affixed to said frame, said pneumatic ram having a piston extending outwardly therefrom, said piston being movable between a first position and a second position relative to said cylinder, said first position causing said piston to be positioned away from the case, said second position urging against the case so as to separate the case from said conveyor means.

11. The apparatus of Claim 1, further comprising:

a positioning means affixed to said frame, said positioning means for fixing a position of the case relative to said frame.

12. The apparatus of Claim 11, further comprising:

a separating means affixed to said frame in spaced relation to said positioning means, said separating means for spacing another case from the case on the conveyor means when said positioning means fixed the position of the case.

13. A method of detecting a cracked or broken case comprising:

fixing a position of the case, the case having an open side and a closed side with a plurality of walls extending therebetween;

applying a force against one of the plurality of walls such that the wall deflects; and

determining whether the deflection of the wall is beyond a desired amount.

14. The method of Claim 13, said step of applying the force comprising:

positioning a surface of a ram against the wall of the case; and

actuating said ram such that said surface of said ram urges against the wall of the case.

15. The method of Claim 14, said step of determining comprising:

sensing an amount of movement of said surface of said ram.

16. The method of Claim 15, said ram having a pneumatic cylinder mounted in a fixed position, said ram having a piston extending outwardly of said cylinder, said ram having an arm pivotally connected to said piston, said step of actuating the ram comprising:

retracting said piston within said cylinder such that said arm pivots outwardly, said arm having said surface thereon urging against said wall.

17. The method of Claim 13, further comprising:

forming a frame having a conveyor thereon; and

conveying the case along the frame prior to said step of fixing the position of the case.

18. The method of Claim 17, said step of fixing the position comprising:

actuating a pneumatic ram such that a piston of the ram extends through said open side and abuts one of said plurality of walls so as to stop a movement of the case relative to said conveyor.

19. The method of Claim 13, further comprising:

ejecting the case when the deflection of the wall is beyond the desired amount.

20. The method of Claim 13, further comprising:

applying another force against said closed side of said case, such that said closed side deflects; and

determining whether the deflection of said closed side is beyond a predetermined limit.

21. The method of Claim 17, further comprising:

placing the case on said conveyor such that said open side faces said conveyor.